

25. Three New Genera of Corals from the Lower Cretaceous of Japan.

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Corals are common in certain horizons of the Mosi-, Hiraiga-, and *Orbitolina* sandstone of the Miyako Cretaceous, Rikutyû province (Iwate prefecture). Numerous specimens of corals from the Cretaceous are stored in the Geological Institute, Tôhoku Imperial University, these were partly collected by myself and partly by other members of the Institute. Among the material examined there were discriminated 21 species in 16 genera and 9 families; of them 19 species belong to the Hexacorals and 2 to the Helioporidae of the Alcyonaria. Arranged in ascending order, each division yielded the following;

1) Mosi sdst.: *Astrocoenia japonica**, *Eugyra* cf. *cotteaui* From.*, *Connectastrea yabei*, *Orbicella nipponica**, *Dermosmilia trichotoma*, *Heterocoenia tetrastepata*, *Heliopora japonica*, *Miyakopora miyakoensis*.

2) Hiraiga sdst.: *A. japonica*, *E.* cf. *cotteaui* From., *Pleurosmilia hideshowimaensis*, *Pl.* cf. *renevieri* Koby, *Miyakosmilia densa*, *M. ishidaei*, *Connectastrea* sp., *Thecosmilia hideshowimaensis*, *Dermosmilia trichotoma*, *D. nagaii**, *Thamnasteria hiraigaensis*, *Centrastrea miyakoensis*, *Polyphyllastrea mammillata*, *Heliopora japonica*, *Miyakopora miyakoensis*.

3) *Orbitolina* sdst.: *Diplogyra lamellosa*, *Thecosmilia* (*Latiphyllia*) *ragaensis*, *Hydnophora* aff. *picteti* Koby.¹⁾

Corals are more frequent, but less favorably preserved in the Mosi sandstone than in the Hiraiga; the two have 6 species in common, and there are 2 additional species in the Mosi and 10 in the Hiraiga. In the latter sandstone, corals are found scattered throughout its sandy deposit; in the *Orbitolina* sandstone, they are rarer, but in general, well preserved.

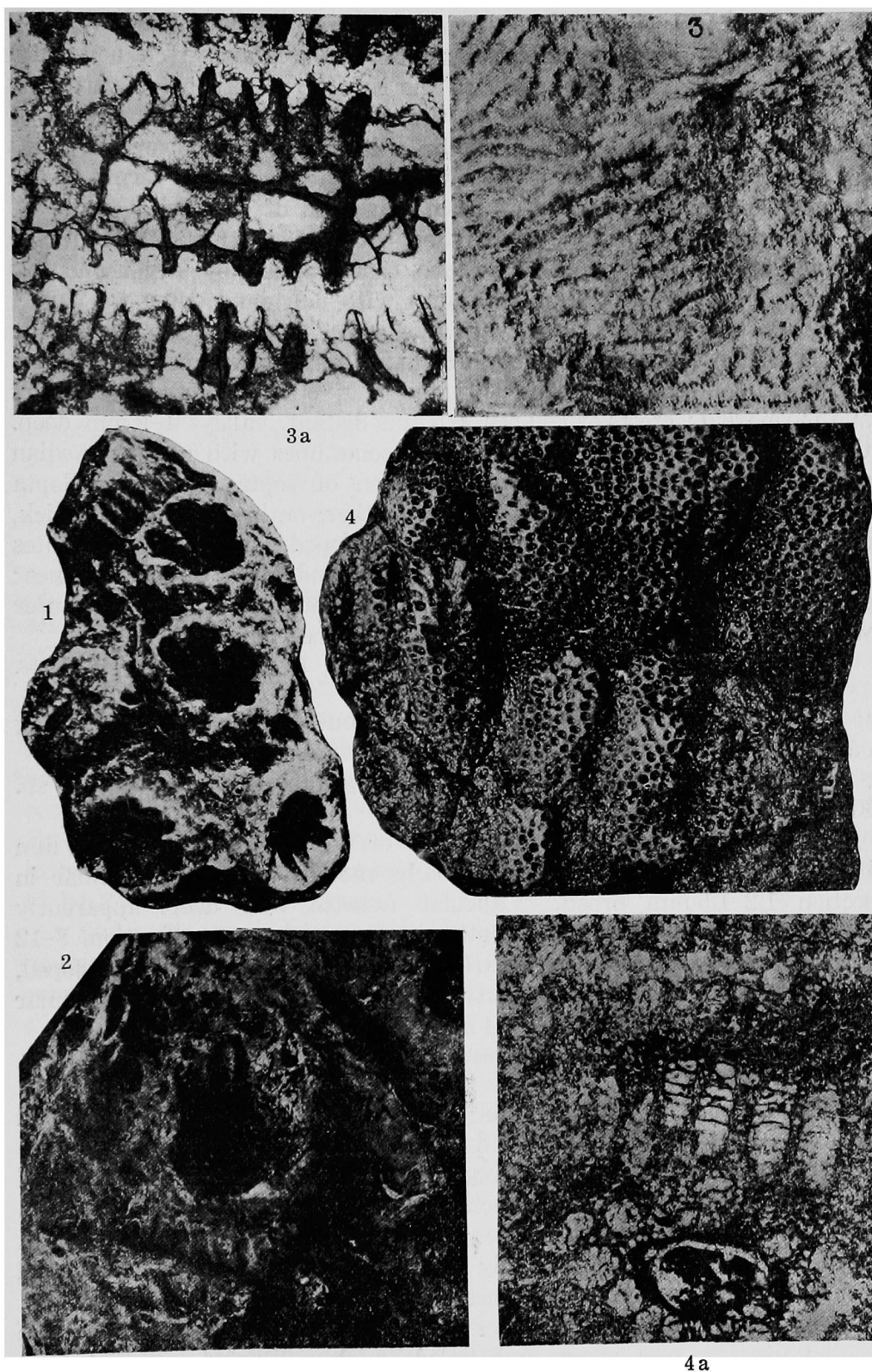
Three of the 21 species discriminated are more or less comparable or allied to certain Urgonian types of Europe, while all the rest are new to science. Brief notes on three new generic types now follow;

Miyakosmilia, gen. nov. Genotype: *Miyakosmilia densa*, n. sp. Fig. 1.

Corallum compound, lamellar, encrusting; corallites cylindro-conical, calices highly elevated above general surface of coarse, flattened blassy exotheca; base of corallum and upper surface of exotheca limited by thick and compact plates, basal one often marginally prolonged. Corallites circular, 15-18 mm. in diam., rather rapidly narrowing toward base; calices projecting, about 12 mm high, fossette 15 mm or more deep; wall and costae thick and compact. Septa stout, wedge-like in section, 2 mm thick at wall, little projecting, 12 in number; septa of 1st cycle strongest, not much extending toward center even at base of calice; those of 2nd cycle shorter and thinner; all septa entire marginally and smooth on lateral faces. No columella or pali. Endotheca poorly developed only near wall. Increase by budding, new buds common in peripheral part of corallum.

Loc. Hiraiga, Tanohata-mura, Simohei-gun, Coll. M. Eguchi. Reg. No. 44500. Hiraiga sandstone.

1) The species without author name are new; those with an asterisk are dominant.



Text-figs. 1-4.

1. *Miyakosmilia densa* Eguchi. $\times 1$.
2. *Miyakosmilia ishidai* Eguchi. $\times 0.6$.
3. *Diplogyra lamellosa* Eguchi. $\times 1$.
- 3a. The same in cross section. $\times 8$.
4. *Miyakopora miyakoensis* Eguchi. $\times 1$.
- 4a. The same in section, partly tangential and partly transverse. $\times 4$.

This is a curious type of corals, the most salient features being the large size, stout skeletal elements of corallites and thick horizontal plates composing the exotheca. In the solidity of structure it strongly reminds one of certain genera of the Oculinidae, while in nature of calice and septa as well of exotheca it recalls the Eusmilid genus *Cyathophora*. Further it is somewhat similar to certain forms of the Astrangidae in the presence of basal expansion of corallum.

Miyakosmilia ishidai n. sp. (Reg. No. 50520) (Fig. 2) from the Hiraiga sandstone is another species characterized by larger and less projecting calices (20–24 mm in diam.) with polygonal outer walls.

Diplogyra gen. nov. Genotype: *Diplogyra lamellosa*, n. sp. Figs. 3, 3a.

Corallum lamellar, 160 mm in diam., 17 mm thick, broad. Corallites in series, collines and valleys usually long, but also not seldom short and meandroid; crests of collines 4–5 mm distant, valleys 1–2 mm deep. Collines more or less rounded above, sometimes with narrow median depression, but with almost no extension of septa on crest. Septa numerous, 4 per 2 mm, parallel to one another, entire marginally, thick, alternating in size. Endotheca well developed, interior of corallites distinctly divided into outer dissepimental and inner tabulated zones; septa partly interrupted by dissepimental zone and not extending to outer wall. No columella; center of individual calices indistinct.

Loc. Hiraiga, Tanohata-mura, Simohei-gun, Coll. H. Yabe. Reg. No. 35258.
Orbitolina sandstone.

Diplogyra is very similar to *Eugyra*, but distinguished by having outer and inner walls and two endothecal zones.

Miyakopora gen. nov. Genotype: *Miyakopora miyakoensis* n. sp. Figs. 4, 4a.

Colony dendroid, branches more or less cylindrical, 15–20 mm broad, Corallites subcylindrical, usually radially arranged, circular in section 1.2–1.5 mm broad. Calicular fossette very deep, apparently vacant, without columella and septa, showing under magnification, 8–12 septal processes, disposed irregularly. Tabulae horizontal, well developed, 2–3 per 2 mm. Coenenchym scanty, though distinctly developed, tubular and densely tabulated; tubes 0.4 mm broad.

Loc. Hiraiga, Tanohata-mura, Simohei-gun, Coll. S. Shimizu. Reg. No. 35256.
Hiraiga sandstone.

Miyakopora is related in the general structure to *Polytremacis* and *Heliopora*, but easily distinguished from them by poverty of coenenchym and mesopores and by the irregularity of size and arrangement of septal processes. In outer aspects it somewhat resembles *Astrocoenia*, but the characteristics described above are sufficient to remove it from the Hexacoralla, especially in the absence of typical septa and columella and the presence of mesopores.¹⁾

At this place I wish to offer my warmest thanks to Prof. H. Yabe of the Institute of Geology and Palaeontology, Tôhoku Imperial University, Sendai, for so kindly correcting and making possible the publication of this short note.

1) Full discussions will appear in a future article of the Saitô Hô-on Kai Museum, Research Bulletin.